Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

become more numerous, they are smaller than before, and the anatomy of the internal organs is more complex. At the end of the body, now much elongated, is a pair of short feet, ending in several bristles. This is the Zoëa stage (Fig. 74, enlarged forty-five diameters) and corresponds to the Zoëa of the Crab, *Carcinas mœnas* (Fig. 75; *a*, natural size), discovered by Thompson.

THE CANADIAN ENTOMOLOGIST completed its first volume in July. The Editor, Rev. C. J. S. Bethune, Credit, Canada, announces that the publication will be continued and the number of pages of each number be increased from eight to at least twelve, and, if sufficiently encouraged, to sixteen, while the annual subscription will be increased from 50 cents to $1.00. We hope this journal will be sustained, for it is a credit to Canadian entomology.

THE AMERICAN ENTOMOLOGIST.—The August number, which comes to us in an attractive cover, is the last of Vol. i. The Editors announce that hereafter each number will consist of thirty-two pages instead of twenty-four, and the annual subscription has been raised from $1.00 to $2.00. The present number abounds with illustrations, while the paper is improved in quality. The magazine cannot fail to satisfy those who wish for information regarding our noxious and beneficial insects.

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.—The Eighteenth Annual Meeting of the Association was held August 18-25, at Salem, Mass. From the great number of papers presented, their high scientific character, and the large number of members present, the meeting was judged by many to have been, both in a scientific and social point of view, the most brilliant and successful one that has been held for many years. About two hundred and seventy-five members were present and one hundred and sixty-three papers were presented. A great deal of business was dispatched, and the legitimate objects of the Association so closely adhered to that invitations from various societies in Boston and Cambridge, the city authorities of Boston, and other places, were reluctantly refused in order that each paper should have a hearing. One day (Saturday) was given up to the enjoyment of a steamboat excursion about Massachusetts Bay, given by the city of Salem.

This meeting was signalized by the formation of two new subsections of Section B, viz.: *Archæology* and *Ethnology*; and *Microscopy*.

There was also held during the session a microscopic convention which proved very successful and interesting to microscopists, and as the standard of instruments made in the United States is not surpassed by those of England, France or Germany, we hope this section will continue to flourish and increase in influence and importance, and stimulate our manufacturers of microscopes, and observers, to still greater perfection in the construction and use of this instrument. As a Natural History journal we are not called upon to report the doings of Section A, Mathematics, Physics and Chemistry, but we should say that its meetings were this year especially interesting from the numerous papers on the recent eclipse which were presented.

The American Association dates its origin as far back as 1840, when some eighteen gentlemen, connected with the geological surveys then in progress, met in the hall of the Franklin Institute, Philadelphia, and organized an association under the name of "The Association of American Geologists." At the meeting held in 1842 the name was changed so as to read "The Association of American Geologists and Naturalists," and in 1847 its sphere was enlarged and its present name adopted; thus embracing every department of science.

The meetings were suspended during the years 1861–65, but since the war they have increased in value and the number of those in attendance, and both this and the last meeting have demonstrated that the American Association fully accords with the genius of our people and institutions, and that as promoting good fellowship and harmony among scientific men, and placing them in a more direct relation with the people, the value of these annual reunions cannot be too highly estimated.

An important change in the Constitution was proposed, which, if adopted at the next meeting, will greatly facilitate business, and will place all the Sections on an equal footing. The change proposed is as follows: Rule V to read—

> "The Association shall be divided into *two* sections, A and B. Section A to be divided into the following subsections: 1, Mathematics and Astronomy; 2, Physics and Chemistry; 3, Microscopy. Section B into the following: 1, Geology and Palæontology; 2, Zoölogy and Botany; 3, Archæology and Ethnology. The two sections may meet as one."

It was voted that the next meeting be held at Troy, N. Y., on the first Wednesday in August.

Officers present at the Meeting: J. W. FOSTER, *President;* F. W. PUTNAM, *Acting Permanent Secretary;* O. C. MARSH, *General Secretary;* J. W. FOSTER, F. W. PUTNAM, O. C. MARSH, B. A. GOULD, LOUIS AGASSIZ, JOSEPH HENRY, BENJAMIN PEIRCE, JOHN TORREY, T. STERRY HUNT, J. S. NEWBERRY, ALEXIS CASWELL, W. C. KERR, *Standing Committee.* (Messrs. ROOD, LOVERING, ELWYN, ROCKWELL and WHITTLESEY were absent.)

Section B. (Natural History)—Prof. L. AGASSIZ, *Chairman;* Prof. T. STERRY HUNT and Rev. G. A. LEAKIN, *Secretaries.* Subsection C. (Archæology and Ethnology)—Dr. E. G. SQUIER and Prof. ARNOLD GUYOT, *Chairmen;* WILLIAM H. DALL, *Secretary.* Subsection D. (Microscopy)—J. E. GAVITT, *Chairman;* E. BICKNELL, *Secretary.*

PAPERS READ IN SECTION B.—NATURAL HISTORY.

On two New Genera of Extinct Cetacea. By *E. D. Cope.*

On the Early Stages of Brachiopods. By *E. S. Morse.*

On the Discovery of the Ammonoosuc Gold Field. By *Henry Wurtz.*

The Ammonoosuc Gold Field in New Hampshire and Vermont. By *C. H. Hitchcock.*

The Gems of the United States. By *A. C. Hamlin.*

On the Laws which Govern the Production of Sexes in Plants. By *Thomas Meehan.*

On a Remarkable Locality of Vertebrate Remains in the Tertiary of Nebraska. By *O. C. Marsh.*

On American Phyllopod Crustacea. By *A. E. Verrill.*

Note upon the Palæotrochis. By *Henry Wurtz.*

On the Homologies of the Palæchinidæ. By *Alex. E. R. Agassiz.*

Remarks on Trichina spiralis. By *J. Baker Edwards.*

On the Plumage of Terns. Communicated by Miss GRACE ANNA LEWIS.

On Norite or Labradorite Rock. By *T. Sterry Hunt.*

On the Geology and Geography of a part of the coast of Maine. By *John Johnston.*

On the Nature of Glands in Acacia and Cassia. By *Thomas Meehan.*

On the Valley of the Amazon. By *James Orton.*

Distribution of Coal, Iron, and the Precious Metals in China. By *A. S. Bickmore.*

On Embryonic Characters in American Salamanders. By *E. D. Cope.*

On the Metamorphosis of Siredon into Amblystoma. By *O. C. Marsh.*

On American Phyllopod Crustacea. By *A. E. Verrill.*

On the Nonfossiliferous Rocks of New England. By *N. T. True.*

Notes on the Geology of Hoboken. By *Henry Wurtz.*

Studies of the Red Sandstones of New Jersey. By *Henry Wurtz.*

Compression as an agent in Geological Metamorphism, with illustrations of distorted pebbles in conglomerates. By *G. L. Vose.*

On the Plasticity of Pebbles and Rocks. By *W. P. Blake.*

Hints on the Stratigraphy of the Palæozoic Rocks of Vermont. By *J. B. Perry.*

New Mosasauroid Reptiles from the Greensand of New Jersey. By *O. C. Marsh.*

Results of a late Geological Reconnoissance of Louisiana. By *E. W. Hilgard.*

On the Geology of Venezuela. By *R. P. Stevens.*

Observations on a New Genus of Polyzoa. By *A. Hyatt.*

The Rocky Mountain Alpine Region. By *C. C. Parry.*

Surface Changes in Maine since the close of the Quaternary Period. By *N. T. True.*

On the Geology of North-eastern America. By *T. Sterry Hunt.*

On Ancient Erosions in the St. Lawrence Valley. By *T. Sterry Hunt.*

Post Glacial Fossils at Hoboken, N. J. By *R. P. Stevens.*

Flora and Fauna of Fresh-water Tertiaries of Oregon and Idaho. By *J. S. Newberry.*

On the Trend of the Rocky Mountain Range north latitude 60°, and its Influence on Faunal Distribution. By *Wm. H. Dall.*

Relations of the Geology of Ohio to that of the adjoining States. By *J. S. Newberry.*

On New Species of Fishes obtained by Prof. Orton in the valleys of the Maranon and Napo. By *Theodore Gill.*

The Homologies and General Structural relations of the Polyzoa. By *A. Hyatt.*

On the Physical Geography and Geology of Brazil. By *Ch. Fred. Hartt.*

On the Cretaceous Age of Silver Deposits in Chihuahua, Mexico. By *J. P. Kimball.*

Notices of some new Tertiary and Cretaceous Fishes. By *O. C. Marsh.*

On the Tertiary Flora of Alaska. By *J. S. Newberry.*

On the Age and Relations of the Metamorphic Rocks of New Brunswick and Maine. By *George F. Matthew* and *L. W. Bailey.*

On the Raritan Clays of New Jersey. By *J. S. Newberry.*

On some points in the Geology of North Carolina. By *W. C. Kerr.*

Description of a New Species of Chiton. By *Wm. Prescott.*

Laws of Mountain Formation. By *J. S. Grimes.*

Notice of Fossils from Table Mountain, California. By *Wm. P. Blake.*

Comparison of the Coral Faunæ of the Atlantic and Pacific Coasts of the Isthmus of Darien, as bearing on the supposed former connection between the two Oceans. By *A. E. Verrill.*

On the Systematic Relations of the Lamarckian Pteroceræ. By *Theodore Gill.*

On certain Peculiarities in the Distribution of Marine Life on the Sea-bottom of the Bay of Fundy. By *A. E. Verrill.*

Preliminary Notice of the Lamellibranchiates of the Upper Helderberg, Hamilton, and Chemung Groups. By *James Hall.*

On some Recent Geological Changes in North-eastern Wisconsin. Communicated by G. R. Stuntz. Read by *J. S. Newberry.*

On Brazilian Drift. By *Ch. Fred. Hartt.*

New Fossil Plants from Gaspè. Discovered by J. W. Dawson. By *J. S. Newberry.*

On the Dyestone Fossil Iron Ore in Pennsylvania. By *J. P. Kimball.*

On the Classification of the Diurnal Lepidoptera. By *S. H. Scudder.*

The Morphology of the Abdominal Appendages of Butterflies. By *S. H. Scudder.*

The Value of the Characters drawn from the external Armature of Lepidopterous Larvæ. By *S. H. Scudder.*

A Classification of the Eggs of Butterflies. By *S. H. Scudder.*

SUBSECTION C.—ARCHÆOLOGY AND ETHNOLOGY.

Indian Migrations. In Four Sections. Sec. 1, Physical Geography of North America, with reference to Natural Highways; and Means of Natural Subsistence afforded by its Areas. Sec. 2, Agricultural Subsistence, and the Character and Extent of Indian Agriculture. Sec. 3, Migrations of Roving and partially Village Indians; deduced from languages, traditions, and known migrations. Sec. 4, Migration of Village Indians; as deduced from the same sources. By *L. H. Morgan.*

The Constitution of Man as modified by Light, Heat and Cold. By *Clinton Roosevelt.*

On the Botocudos of Brazil. By *Ch. Fred. Hartt.*

Observations on the Languages of South America, and the Classification of the Indian Nations thereof. By *Porter C. Bliss.*

On the boring of Stone Implements, illustrated by specimens collected by R. W. Haskins, from Indian Graves on the banks of the Ohio. By *F. W. Putnam.*

A Conjectural Explanation of the uses of the Embankments of the Mound Builders. By *L. H. Morgan.*

The Ainos, or Hairy Men of Yesso, Saghalien, and the Kurile Islands. By *A. S. Bickmore.*

Evidences of high antiquity in the Kjœkkenmœdden Deposits of New England. By *E. S. Morse.*

On the Distribution of the native Tribes of Alaska, and the adjacent Territory. By *W. H. Dall.*

SUBSECTION D.—MICROSCOPY.

On the Resolution of Microscopic Test Objects. By *A. M. Edwards.*

Some Remarks on an "Opaque Illuminator," applied to an Immersion Objective, and an Immersion Objective of Long Focal Distance. By *E. Bicknell.*

Some Remarks on the Infusorial Deposits of North America. By *A. M. Edwards.*

Note on a Phase in the Reproduction of a Confervaceous Alga belonging to the genus Œdogonium. By *A. M. Edwards.*

Mr. THOMAS MEEHAN read a paper "On the Laws which govern the production of sexes in Plants." At a previous meeting he showed that extra vigor or vitality was accompanied by a greater cohesion or adnation of the leaves of coniferæ with the stems. Similar laws, it seemed probable, governed the production of the sexes in plants. The female flowers of Norway spruces were always on the most vigorous branches; male flowers only on weak branches. As the strong ones become weak they lose the power of producing females and produce males only. But the Larch afforded the best illustration. As shown last year the most vigorous shoots have the leaves adherent with the stems. What we call leaves are only foliaceous awns. The true leaves only appear when the axial growth is arrested, the verticils or spurs bearing the true leaves. When the reproductive age commences the Larch can only bear flowers from these weakened spurs; only the strongest of these produce female flowers, and only after two or three years of weakening process, by the shade afforded by the increased growth of branches, do the male flowers appear. So low is vitality when these male flowers appear that with their production the whole spur dies. The long, dead, warty strings on Larch shoots are what have been male flowers. The same law can be traced more or less through all *Coniferæ*. In *Amentaceæ* the same law, only in another form, prevails. In *Quercus*, *Juglans*, *Carya*, and others, male flowers appear with the opening leaves of spring, evidently formed during expiring vegetative force the fall before: the female only after growth has grown vigorously on the apex or culmination of the greatest vigor. In *Corylus*, *Carpinus*, and allies, the male flowers were also on the weakest parts. There were in some plants several *waves* of growth in the most vigorous shoots; for instance *Pinus inops*, *P. pungens*, *P. mitis*, *P. rigida*, and some oaks. In these cases the first wave was the most vigorous, the last the weakest, but the female flowers are not on the apex of the shoot, but on the apex of the *most vigorous wave*. The *Cyperaceæ* afforded similar illustrations. Vigor is only one form of high vitality. Power of endurance is another. The Norway spruces, and those species generally which were the hardiest individually, or in comparison with other species, had greater powers to produce female flowers. Not so easily seen, but yet evident was the law in hermaphrodites as in monœcious plants. In many hermaphrodites there was known a tendency to become unisexual, sometimes in the male, sometimes in the female direction. A general debility follows the male in such cases, and increased vitality the female. *Viola*, *Fragaria*, and other instances were given in favor of the latter point, and double flowers, variegated plants, etc., as instances of degeneracy to male weakness. The conclusion drawn from the facts given was, not to establish the theory, but to excite investigation whether it was not *the highest types of vitality only which take on the female form?* He concluded with the bare suggestion that the same laws might prevail in the animal world.

He also read a paper "On the Nature of the Leaf-glands in *Cassia* and *Acacia*." Dr. Asa Gray says in the fifth edition of the "Manual" that the glands on *Cassia Marilandica* are near the base of the petiole. This is true only of the upper leaves. In the lower the position varies from near the base up to the first pair of leaflets. This shows it is not a part of the leaf system as it then would have its regular position. It *must be an accident*. In a neighboring genus (*Gleditschia*) we find two buds are formed above each leaf; the one axillary, the other just above, and usually forming a stunted branch or spine. The lower bud produces the growing shoot. In another allied genus, *Gymnocladus*, two or *three* buds are formed one above another, very few of which ever push at all, but when this does take place, it is only the *upper bud* which forms a shoot. The *lower bud* is generally about the centre of the dilated base of the petiole. Thus we have a class of allied plants, with two or three buds one above another, in some cases two inclined to push freely, although one as a spine (as in *Gleditschia*), the lower as the shoot; in another, as in *Gymnocladus*, scarcely pushing at all, and rather absorbed by the stem; but when pushing at all, the *upper one*, and on the other side of *Gleditschia*, *Cassia*, *Acacia*, etc., with the lower bud *absorbed by the petiole, and thus forming the gland.*

W. H. Dall read a paper "On the distribution of the native tribes of Alaska, and the adjacent territory." After reviewing the works of Baer, Wrangell and Holmberg, Mr. Dall proposed a new classification, the revision being based on new information obtained during personal exploration by himself and his companions.

The North American natives are divided into two great groups, Indians, and, another for which there being no general term, he proposed the name Orarians (from *ora*, a coast), in reference to their universal coastwise distribution.

Various points of interest in regard to the several tribes were noted, and their comparative relations were shown by a table of twenty-four dialects, and a colored map showing their geographical distribution.

Prof. ALBERT S. BICKMORE read a paper "On the Distribution of Coal, Iron, Mercury, Tin, and the precious metals, in China. Prof. B. showed that coal occurs from place to place over the whole of China proper, and that iron is found in the north of China, especially in the Province of Shansi, where the ore is obtained from which the steel used in the manufacture of razors, knives, etc., is made. Mercury, or "Water-silver" as the Chinese call it, occurs in Shansi in small quantities. Tin is reported from various localities. Petroleum was not only known but used in lamps more than 160 years ago. The Chinese name for it, "Oil of Stone," is identical with ours.

Prof. C. H. HITCHCOCK stated in his paper "On the Ammonoosuc Gold Fields," that this area begins near Bellows' Falls, and extends into Canada, following the Merrimac river. It was at first referred to the Quebec group, but he thought the rocks distinct. The gold was found in 1864 in the rocks, by Mr. Henry Wurtz, at Lima, N. H. The rock is a black clay slate, with quartz veins containing iron pyrites, ankerite and galena.

Dr. C. C. PARRY in his paper "On the Rocky Mountain Alpine Region," stated that the wooded belt of coniferous trees begins by a somewhat scattering growth near their base at an average elevation of six thousand feet above the sea. This belt acquires its densest growth, and exhibits the greatest number of distinct species, at an elevation of between 7000 and 9000 feet, and terminates by an abrupt well-marked line, at an average height of 11,300 feet.

The limit of upright tree growth is marked with a singular abruptness. He explained this by supposing that the so called timber line marks the extreme point of minimum winter temperature, below which no exposed phenogamous vegetation can exist. All that survives above this point does so by submitting to a winter burial of snow, beneath which protecting cover it is enabled to maintain its torpid existence. The usual characters of alpine plants, here as elsewhere exhibited, consist in a dwarfed habit of growth, a late period of flowering, and early seeding, the forms being almost exclusively perennial.

The alpine flora is represented by thirty-four natural orders, of which thirty-one belong to phenogamous plants, the remaining three include the higher orders of Cryptogams; of the latter the ferns are represented by a single species (*Cryptogramna acrostichoides* R. Br.), not exclusively alpine. Mosses are numerously represented, but are still comparatively rare, while lichens are most abundant and afford the greatest number of species.

The alpine area lying between the thirty-seventh and forty-first parallel of latitude, is from 1200 to 1500 square miles in extent. As a sanitary retreat during the summer months it is unexcelled in the purity and coolness of its atmosphere, the clearness of its flowing streams, and its picturesque, extended views.

Prof. E. D. Cope, in his paper "On the Larval Characters of the Urodela," stated: 1st, That it is shown that one portion of the primary groups is inexactly parallel to larvel stages of the other portion. 2d, That certain genera only fail of exact parallelism with larval stages of other genera by but two characters. 3d, That others lack but one character; and 4th, That others present an exact parallelism.

He had reason to think from the development of Amblystoma, and experiments on salamander and frog larvæ, that the process of growth or assumption of generic characters may be much retarded or accelerated. Such a process would produce the cases of exact parallelism; and if the retardation in the character should continue, would necessarily soon result in inexact parallelism in that respect, thus producing a complete metamorphosis of the genus. The reverse of this process is acceleration, and expresses the mode of progress of a type to its highest development in time history, while the retardation is the mode of its degradation.

Mr. Hyatt remarked that Prof. Cope's views were, so far as the law of acceleration was concerned, equally good among the shell-covered Cephalopods. Among these animals the shells of the species displayed the action of this law. He quoted from a previous publication in the "Memoirs of the Boston Society of Natural History," in which this law had been distinctly stated. But farther than this that its action was also as forcibly displayed in the species itself as in the genus.

Mr. A. Hyatt read a paper "On the Homologies and General Structural Relations of the Polyzoa." The Embryology of the Hypocrepian Polyzoa show that Loxosoma is the lowest of all in the order, and together with Pedicellina form the lowest suborder of the group. The progress of the whole order of Polyzoa is from this permanently invaginated form through intermediate stages to Cristatella, in which, when the polypide is inserted, even the stomach is carried up beyond the orifice of the cell. Thus the progress of structure is from an animal in which all the organs are crowded into the anterior end, into the cœnœcial system, and to one in which the cœnœcial or reproductive, evaginatory or gastric, and the lophoric or neural systems are all distinct when the animal is exserted.

The Polyzoön may be transformed into a Brachiopod by simply enlarging the cœnœcial wall and carrying it over, inclosing the lophophore and reversing the position of the arms. Thus both the Polyzoa and the Brachiopods may be defined as sacs, closed at the posterior end by discs surrounded by tentacles, and perforated by an edentulous mouth, from which hangs the alimentary canal in the antero-posterior axis of the sac. The whole plan of the Mollusca was stated to be that of a simple sac, and the term Saccata proposed as more appropriate than that of Mollusca. The objection that the whole animal kingdom may be said to be sac-like has been raised. The Radiata are, it is true, radiated sacs, the Articulata ringed sacs, and the Vertebrata sacs divided by the vertebral axis, but the Saccata are typically sacs.

Prof. THEO. GILL, in his communication "On New Species of Fishes obtained by Prof. Orton in the Valleys of the Maranon and Napo," concluded from the study of twenty-five species collected by Prof. Orton, that there were no distinct fish faunæ in these river valleys, species of the same genera having been found distributed through them, some of the genera having also occurred lower down the Amazon, while one genus inhabited the fresh waters of Central America.

Dr. T. STERRY HUNT, in his remarks "On the Geology of North-eastern America," exhibited a new geological map of the British Provinces, and of the United States as far South as Virginia, and West to near the base of the Rocky Mountains. He called attention to the uncolored portion represented by New England, and to the fact that less was known of the age of the rocks of that region than any other. He stated that he knew of no eruptive granitic rocks, but that with an occasional exception they were of sedimentary origin. Metamorphism depends on the original quality of the sediments; we cannot produce granite from sandstone, or dolomites from limestones, etc., etc. He cited a case observed in New Brunswick where the Dadoxylon sandstones are overlaid by granitoid and felspathic grits, and yet the Dadoxylon sandstones are unaltered. On lithological grounds he thought that the rocks about Lowell and Newburyport, containing thick beds of limestone, were of Laurentian age, and having seen specimens of Labradorite, from boulders in Marblehead, in the Museum of the Peabody Academy, he suggested that there might be Laurentian rocks about Salem.

Messrs. MATTHEW and BAILEY, in their "Remarks on the Age and Relations of the Metamorphic Rocks of New Brunswick and Maine," after giving a summary of the labors of Gesner, Robb, Matthew, Dawson, Hitchcock, Bailey and Hartt in this region, describe the Laurentian, Huronian (or Cambrian), Lower and Upper Silurian rocks, and give a detailed description of that portion of the metamorphic area not occupied by the rocks above mentioned. This portion consists of Upper Devonian strata and granite, of which the latter forms, in New Brunswick, a ridge of variable width, having Devonian slates on both sides. The two together probably occupy three-quarters of the metamorphic country south of the New Brunswick coal-fields.

Two principal divisions of this series may readily be distinguished, on the south side of the granite ridge, viz.: (1) the Lepreau, comprising diorites, felsites, and conglomerates in its lower portions; and in the upper subdivision gray sandstones, black slates, and the Dadoxylon sandstones. To the lower division, viz.: (2) the Mispeck division, belong, in the lower subdivision, conglomerates and diorites, Cordaite, fine-grained slates and orthophyre; and in the upper subdivision conglomerate and slate, granitoid grit, talcoid (?) slates and limestone. At the base of these rocks lie the granite rock, and there appears to be a gradual passage from true granite, through felsites, to undoubted Upper Devonian slates, these Nerepis granites being probably altered sandstones and grits at the base of the Upper Devonian series. The rocks south of the granite ridge were littoral, and those on the north were deposited in deeper waters, the rocks being much more uniform. In the partially metamorphic slates of the Lepreau division, plants and shells characteristic of the Upper Devonian have been found, and when more highly altered, well defined crystals of staurotide, andalusite and garnet.

Having unexpectedly found that the greater part of the metamorphic country in New Brunswick, near the United States border, is of Upper Devonian age, the authors offered some suggestions and conjectures on the probable age of the schists, granites, etc., in the south-eastern half of Maine.

The granite ridge of southern New Brunswick enters the State of Maine at Calais, and is there represented by a thick body of conglomerate gneiss (composed of dark sienitic pebbles, from two inches to as many feet in diameter, enclosed in a white granitic, often porphyroid matrix), dark sienitic gneiss and white granite, which they believed to be Laurentian, and a mass of red, weathering, coarse granitoid rocks, which may represent those of the Nerepis, and perhaps constitute the basal portion of the Devonian. Both of these are probably represented in the granitic district of south-eastern Maine. To the eastward of this we appear to have chiefly Upper Devonian rocks, with occasional bands of upturned Upper Silurian rocks. The "traps" of this area correspond to the diorites, etc., at the base of the Mispeck division, and the red jasper to the red felsites and orthophyre above them. It is probable that the Lepreau divisions will be but meagrely represented, and the upper half of the Mispeck wanting in this tract, such being the case around the Passamaquoddy Bay.

On the north-west side of the granite ridge noted, we again meet in New Brunswick the Upper Devonian slates, now in their pelagic aspect. On the Maine border above Baring these consist of finer gneiss and micaceous quartzite, the former dipping towards and abruptly meeting the gneiss conglomerate, above alluded to, within which, along the line of junction, small pieces of the Devonian gneiss are imbedded, as though fragments of the latter had sunk in the pasty mass. Farther north these Devonian beds are folded and dip northward, passing beneath a heavy body of fine greenish and grayish micaceous slates, which here represent the Cordaite shales, or Lower Mispeck beds.

A similar arrangement is indicated by Prof. Hitchcock, who represents the slates or schists north of Baring as lying in a basin between the granite ridge above named, and another which crosses the northern part of Washington County and is supposed to connect through the northern part of Hancock County with the granitic masses around Mount Desert on the coast. On the southern side of this last granitic ridge, and forming the northern side of the trough, are a series of beds described as quartz rock and calciferous mica schist, and which are said to be the same as those known to extend through York County, N. B., towards the Bay de Chaleur. This belt of rocks has been recognized, with essentially the same features, by Mr. Bailey on the St. John River above Fredericton, and about Grand Lake in the eastern Schoodic region in Maine.

The granites on the north side of this basin are overlaid by a gray gneiss holding bands of micaceous quartzite, which constitute the first rocks seen on the northern slope of the granitic mass. These may be the "argillo-micaceous schists," described by Prof. Hitchcock as holding a similar position in Maine and which are said to extend in an "essentially unaltered form to the Saco River."—in fact nearly reaching the south-west corner of the State. At this end of the basin, where probably the lower beds are exposed, the rock contains garnets, staurotide and kyanite. Along the north-east side (in Northport) it holds andalusite. If these rocks represent here the Lower Lepreau series, as the mica schists, holding a similar position and containing the same minerals, do in the central parts of Charlotte County, the geology of this portion of the Province will be greatly simplified.

There is a belt of granite associated with masses of obscurely stratified gneiss and beds of pyritiferous mica-schist extending along the Coast of Maine from Portland eastwards to the mouth of the Penobscot River, which, as described in Prof. Hitchcock's Report, resembles the Laurentian series of New Brunswick. With this exception, and possibly that of the belt of slates and quartzites which skirts the southern edge of the northern granite belt, nearly all the formations of south-eastern Maine might, on lithological grounds, be compared with those of the Upper Devonian series. Among these, however, may be islands or ridges of older rock, as is probably the case at some points along the eastern border.

PROF. E. D. COPE, read a paper "On two New Genera of Extinct Cetacea." His observations embraced a description of the characters of a very large representative of the Dugong of the modern East Indian Seas which was found in a bed, either Miocene, or Eocene, in New Jersey. It was double the size of the existing Dugong, and was interesting as adding to the series of Asiatic and African forms characteristic of American Miocenes. Another type was regarded as remotely allied to Squalodon, but it was edentulous, and furnished with a broad shallow alveolus, either of a form left after shedding a tooth, or that adapted to a broad obtuse tooth. It constituted a remarkable new genus which was called *Anopolonassa forcipata.* It was found in post pliocene beds near Savannah. He also exhibited teeth of two gigantic species of Chinchilla which had been discovered in the small West India island of Anguilla, which has an area of about thirty square miles. The specimens were taken from caves and were thought to indicate post pliocene age. With them was discovered an implement of human manufacture, a chisel made from the lips of a shell, *Strombus gigas.* The contemporaneity of the fossils and human implements was supposed, but not ascertained. Its interest and connection with human migrations were mentioned; also the supposition of Pomel, that the submergence of the West India Islands took place since the post pliocene period.

PROF. O. C. MARSH described a "remarkable locality of Vertebrate remains in the tertiary of Nebraska." The locality described was the Antelope Station on the Pacific Railroad in South-western Nebraska. While engaged in sinking a well at that place in June, 1868, a layer of bones was found by the workmen at a depth of sixty-eight feet below the surface, which were at first pronounced to be human, but, during a trip to the Rocky Mountains, Prof. Marsh examined the locality and the bones, and found that the latter were the remains of tertiary animals, some of which were of great interest. The well was subsequently sunk about ten feet deeper. An examination proved that among them there were four kinds of fossil horses, one of which he described in November last as *Equus parvulus*. Although it was a full-grown animal it was not more than two and one-half feet high. It was by far the smallest horse ever discovered. Of the other kind of fossil horses one was of the Hipparion type, or the three-toed horse. Including the above the number of species of fossil horses discovered in this country was seventeen, although the horse was supposed to be a native only of the old world, and was first introduced here by the Spaniards. Of the other remains there were two carnivorous animals, one about the size of a lynx and the other considerably larger than a lion — twice as large as any extinct carnivora yet discovered in this country. Among the ruminants found in this locality was one with a double metatarsal bone, a peculiar type, only seen in the living musk deer and in the extinct anaplotherium. There were also the remains of an animal like the hog, a large rhinoceros, and two kinds of turtles. These, together, forming fifteen species of animals, and representing eleven genera, were all found in a space ten feet in diameter and six or eight feet in depth. It is supposed that the locality was once the shores of a great lake, and that the animals were mired when they went down to the water to drink.

Prof. W. P. BLAKE read a paper "On the Plasticity of Pebbles and Rocks." He presented some fresh evidence from a conglomerate in Arizona Territory. This conglomerate consisted of a paste of micaceous schist, filled with pebbles of varying size, and elongated and compressed similar to those of the Newport conglomerate. They presented even more conclusive evidence of having been drawn out, and compressed by tension and enormous pressure, than even the Newport pebbles. Eminent geologists had alleged that deep seated rocks often became plastic and that those not much exposed to air were softer than those on the surface. Prof. Blake then adduced arguments and facts tending to substantiate this theory. The distortion of hard rocks was found on a large scale in the flanks of the Sierra Nevada of California. Prof. Blake said that the consideration of the phenomena led him to conclude that enormous and long continued pressure and tension probably at a moderate elevation of temperature (but not necessarily so) had been sufficient to produce the molecular movement of these hard and apparently unyielding materials. Mechanical force alone appeared to have been the agent, and M. Tresca had shown that under enormous pressure solids could be made to flow in the same manner as liquids, or that in their movements they followed the same law. By the careful study of these phenomena of plasticity new views were opened of the structure of great rock masses; of the phenomena of plication, lamination; and of the origin of some structural peculiarities of mineral veins and their enclosing walls. In view of all the facts, Prof. Blake thought that geologists should admit that very great changes had been produced in the structure of rock masses by simple mechanical pressure, unaided by any great elevation of temperature or by extraordinary chemical agencies.

PROF. O. C. MARSH read a paper "on some new Mosasauroid Reptiles from the Greensand of New Jersey." The striking difference between the reptilian fauna of the Cretaceous period of Europe and the same period in America was that in the former there were great numbers of remains of ichthyosauri and plesiosauri, while hardly a tooth or vertebra of the mosasauroids was to be found. In America the two former kinds of reptiles appeared to be almost entirely wanting. One or two specimens found here had been alleged to be ichthyosauri or plesiosauri, but farther examination threw strong doubts on the matter. To replace these forms, however, the mosasauroids were found in abundance. The affinities of the mosasauroids were chiefly with the serpents rather than with other reptiles, although they had certain other affinities with swimming reptiles. Prof. Marsh produced some fossil remains of different specimens of mosasauroids, showing the peculiar formation of the skull. These reptiles appeared to have no hind limbs, although Cuvier thought he had detected them. The specimens found in this country, however, afforded no evidence of this. He called attention to two new forms of the family — the *Macrosaurus platyspondylus* and the *Mosasaurus Copeanus* — in which the articulation of the lower jaw was one of the most interesting features. The larger specimens of these animals showed that they must have been the monarchs of the seas of those periods, and in appearance and size not unlike the popular notion of the sea serpent, being sometimes seventy-five feet long.

"On the Flora and Fauna of the Miocene Tertiary Beds of Oregon and Idaho." Prof. Newberry exhibited a beautiful series of fossil plants collected by Rev. Mr. Condon of Dallas City, Oregon. These plants were from the fresh-water deposits which cover so large a surface of the Great Basin in Nevada, Idaho and Oregon, and were of special interest both from their geological position and botanical character. They were contained in the sediments deposited by a series of great fresh-water lakes, which once existed in the area lying between the Rocky Mountains and Sierra Nevada.

In the report of his explorations in California and Oregon, Prof. Newberry had described these lacustrine deposits and had shown how the lakes at the bottom of which they accumulated had disappeared by the cutting down of their outlets, the gorges through which the Columbia, Klamath and Pitt Rivers now flow.

The Klamath lakes, etc., were miniature representatives of these ancient lakes which were apparently quite as extensive as our present great lakes. The fossil plants contained in the collection made by Rev. Mr. Condon were most beautifully preserved, and consisted of a great number of species, most of which were new; but a number were identical with species found in the Miocene Tertiary of the Upper Missouri. There are also some species which had been found in the Miocene beds of Frazer's River and Greenland. The present collection will add much to our knowledge of the Flora of the Miocene period on this continent. The animal remains found in the same series of Tertiaries with the plants, consist of fresh-water shells and fishes, with a few mammalian bones. The shells are numerous species of *Melania*, *Planorbis*, *Corbicula* and *Unio* — all, so far as known, new to science. The fishes were Cyprinoids allied to *Mylopharodon*, etc., — the fishes now inhabiting the Western rivers. Among the mammalian bones contained in this collection were some that plainly belonged to the horse. The beds containing the animal remains were perhaps more recent than the plant beds, but still Tertiary.

Mr. W. H. Dall read a paper "On the Trend of the Rocky Mountain Range, north latitude 60°, and its influence on Faunal Distribution." The paper stated that the Rocky Mountain Range, between latitudes 60° and 64°, bends trending with the Eastern coast, so that instead of there being, as represented on the old maps, a straight line of mountains up to the Arctic Sea, there is an elevated plateau, only broken occasionally by a few ranges of hills. This bend of the mountains prevented the characteristic birds of the west coast from coming north, while a few species of Eastern birds came clear to Behring's Sea, north of it, over the plateau. He also stated that the elevation of the bottom of Behring's Straits one hundred and eighty feet would make dry land between Asia and America, but that a deep ocean valley extended south-west from Plover Bay, just west of the Straits, along the Kamtchatka Coast.

DEDICATION OF THE MUSEUM OF THE PEABODY ACADEMY.—On the eighteenth of August, being the first day of the session of the American Association, the Museum of the Peabody Academy was formally dedicated, and it seemed peculiarly fitting that the exercises should take place in connection with the meeting of the American Association, which adjourned over in order that the members should participate in the proceedings.

At 2 P.M. a number of friends of Science met at the Museum, when a formal transfer of the building was made by the Committee of the Trustees of the original fund, to the Trustees of the Academy, and the charge of the Museum committed to the Director, Mr. F. W. Putnam. The audience then repaired to the Tabernacle Church to listen to the Dedicatory

Address by the President, W. C. Endicott, Esq. Hon. J. H. Clifford replied on the part of Mr. Peabody, the founder of the Academy, who was unfortunately absent from the ceremonies owing to his continued ill health. Remarks were made by Mayor Cogswell; B. H. Silsbee, the President of the East India Marine Society; Henry Wheatland, President of the Institute, and by J. W. Foster, President of the American Association for the Advancement of Science.

ANSWERS TO CORRESPONDENTS.

W. W. B., Indianapolis, Ind.—Your specimens are as follows: 2, *Onoclea sensibilis;* barren frond, common at the north and south. 3, *Pteris aquilina;* widely distributed. 4, *Asplenium thelypteroides;* found north and south. 5, a species of *Galium.* 6, *Eleocharis olivacea* Torrey. 7, no fruit, and not easily determined. If you mean by the "Snow-plant" *Sarcodes sanguinea,* you will not be able to cultivate it, as it is parasitical in its habits and proves very difficult to rear. Herbariums are not usually published unless of rare and costly character, such as of newly discovered species like Fendler's of Venezuela, Wright's of Cuba, etc.—J. L. R.

H., Danversport, Mass.—The worm declared by your patient to have been found in the wound is a worm allied to the common earthworm, and probably lived in the muddy bottom of a well, spring, or brook, and may possibly have occurred in the water used in dressings. We have kept it alive in the bottle in which you brought it, for four or five days.

W. W. B., Indianapolis.—No. 8 is *Botrychium lunaroides* var. *obliquum;* barren frond. Hooker's Synopsis Filicum, and Presl's Pteridigraphia, are essential in studying the ferns extensively.—J. L. R.

W. C. F., Eastham, Mass.—The frog is *Rana sylvatica.*

EXPLANATION OF PLATE 7.

RADIOLARIA.—Fig. 1. Tetrapyle octacantha. Fig. 2. Haliomma amphidiscus. 3. Haliomma longispinum. 4. Haliomma hexacanthum. 5. Haliomma Humboldtii.

BOOKS RECEIVED.

Scientific Opinion. June, July, Aug., Sept. London.

Journal of Travel and Natural History. Vol. i, No. 6. 1869. London. Two shillings.

Proceedings and Transactions of the Nova Scotian Institute of Natural Science at Halifax, N. S. Vol. ii, Part 2. 1867–8. 8vo. Halifax, 1869.

Second Annual Report of the Trustees of the Peabody Museum of American Archæology and Ethnology. Boston, 1869. 8vo., pp. 23.

Pathogenesis of Ptelea trifoliata; a Report to the American Institute of Homœopathy. By E. M. Hale, M. D. Boston, 1869. 8vo, pp. 85.

American Journal of Numismatics. July. New York.

Library of Education, selected from the best writers of all countries. Scottish University Addresses. By J. S. Mill, Jas. Froude, and T. Carlyle. New York: J. W. Schermerhorn & Co. July, 1869. 32mo, pp. 192. 20 cents.

CORRECTIONS.

In our September number, in the "Chapter on Mites," we suggested that Plate 6, fig. 1, represented the larva of *Dermaleichus,* and that fig. 3 represented the male. We were led to this opinion by the resemblance of fig. 1 to fig. 4, the larva of another genus of mites. After the article went to press we obtained the elaborate memoir of Claparede, entitled "*Studien an Acariden*" published in a recent number of Siebold and Köllikers."Zeitschrift" where he has given a minute account of a neighboring genus, *Myocoptes musculinus* (Koch) found parasitic on mice. After studying Claparede's work we judge that our figure 1 must be a female Dermaleichus, and that fig. 3 represents the male, and fig. 2 the young male.—A. S. P.

On page 368, line 2 from bottom, and on page 373 line 10 from top, for Chelytus *read* Cheyletus. Page 316 line 20 from top, for Euglenia *read* Euglena.

On page 331, line 6 from bottom, for Orange, N. J. *read* Orange, N. Y.

On page 326, line 1 from the bottom, for "Mission County," *read* Mifflin County, Pa.

The author of the article on "Table-mountain Pine" (J. T. Rothrock) also states that Mr. Meehan has since found the same pine on the hills near Harrisburg, Pa., and concludes it is native to the whole interior of the State of Pennsylvania. (See Gardener's Monthly, June, 1867, p. 173.)